

# WIDE RANGE FREQUENCY OFFSET ESTIMATION IN OFDM SYSTEMS

## ABSTRACT OF THE DISCLOSURE

Systems and methods for wide offset frequency synchronization in OFDM communications. Frequency domain OFDM bursts include training symbols having known transmitted values in known frequency domain positions. Received values at the known training symbol positions are correlated from burst to burst. The magnitudes are used to establish and correct small integer frequency offsets as measured in frequency domain symbol widths. The phase of the correlation result is used to determine and correct integer frequency offsets that exceed the training tone spacing. Use of the phase to correct large frequency offsets greatly extends the acquisition range required for low cost analog components.

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